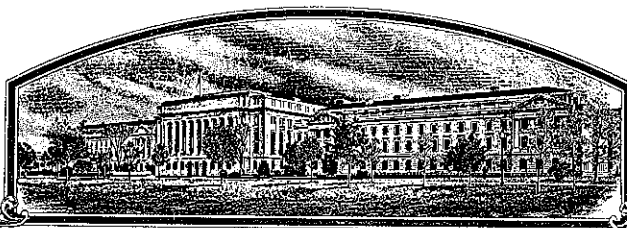


No.



9500154

# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

*Delta and Pine Land Company*

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'DP 3519<sup>s</sup>'

*In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirtieth day of May in the year of our Lord one thousand nine hundred and ninety-seven.*

Attest:

*Marsha A. Starn*  
Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*Jan Phillipsman*  
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE  
(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate)		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.	3. VARIETY NAME
DELTA AND PINE LAND COMPANY		DPX 3519	DP 3519 <sup>STG</sup> <sup>23 May 1995</sup>
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP)		5. PHONE (include area code)	FOR OFFICIAL USE ONLY PVPO NUMBER 9500154
100 MAIN STREET SCOTT, MS 38772		(601) 742-3351	
6. GENUS AND SPECIES NAME	7. FAMILY NAME (Botanical)		F I L I N G Date MAY 12, 1995 Time <input type="checkbox"/> A.M. <input type="checkbox"/> P.M.
Glycine max	Leguminosae		
8. CROP KIND NAME (Common Name)	9. DATE OF DETERMINATION		F E E S Filing and Examination Fee: \$ 2450.00 Date MAY 2, 1995 Certificate Fee: \$ 300.00 Date 05/21/97
Soybean	1992		
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.)			R E C E I V E D
Corporation			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		12. DATE OF INCORPORATION	
Delaware			

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

Dr. Harry Collins  
P.O. Box 157  
Scott, MS 38772

PHONE (include area code):

(601) 742-3351

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

- a. ☒ Exhibit A, Origin and Breeding History of the Variety
- b. ☒ Exhibit B, Novelty Statement.
- c. ☒ Exhibit C, Objective Description of Variety.
- d. ☒ Exhibit D, Additional Description of Variety.
- e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.
- f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office \_\_\_\_\_
- g. ☒ Filing and Examination Fee. (2,325) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.)

☐ YES (If "YES," answer items 16 and 17 below) ☒ NO (If "NO," skip to item 18 below)

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?

☐ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?

☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?

☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act Give date \_\_\_\_\_)  
☒ NO

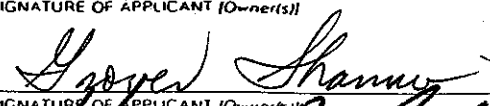
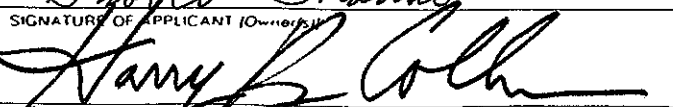
19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?

☐ YES (If "YES," give names of countries and dates)  
☒ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT (Owner(s))	CAPACITY OR TITLE	DATE
	MIDSOUTH SOYBEAN BREEDER	4/12/95
SIGNATURE OF APPLICANT (Owner(s))	CAPACITY OR TITLE	DATE
	VICE PRESIDENT DIRECTOR OF RESEARCH	4-26-95

**EXHIBIT A****DELTA AND PINE LAND COMPANY'S APPLICATION FOR DP 3519 STS****ORIGIN AND BREEDING**

- Summer 1988 - The cross W20 X Hutcheson made
- Winter 1988-1989 - F<sub>1</sub> grown to F<sub>2</sub> in winter nursery
- Summer 1989 - A5403 crossed to random sulfonylurea F<sub>2</sub> plants from W20 X Hutcheson
- Winter 1989-1990 - DP 415 crossed with F<sub>1</sub> of A5403//W20/Hutcheson
- Summer 1990 - F<sub>1</sub> advanced to F<sub>2</sub> in winter nursery
- Winter 1990-1991 - F<sub>2</sub> advanced to F<sub>3</sub> in Costa Rica by bulk pod method. F<sub>2</sub> plants sprayed with sulfonylurea herbicide to eliminate susceptible plants
- Summer 1991 - F<sub>3</sub> advanced to F<sub>4</sub> in Costa Rica. F<sub>3</sub> plants sprayed with sulfonylurea herbicide to eliminate susceptibles.
- Winter 1991-92 - F<sub>4</sub> plants pulled after being subjected to spraying with sulfonylurea herbicide.
- Summer 1992 - F<sub>5</sub> planted in 3 replicate hill plot test. F<sub>5</sub> seed determined to be tolerant to sulfonylurea herbicide
- Line 90373-198 was identified and determined to be stable for characteristics as described in Exhibit C of this application. At this time no variants are known or were observed.
- 1993 - Line 90373-198 with a key number of 4198 was yield tested in a 2 replicate test at 2 locations. Seed increase was begun.
- 1994 - Tested as key number 5019 in advanced yield tests at 15 locations across the Southern U.S.. Seed was increased and rogued to eliminate any off-type plants.
- 1995 - Tested in state experiment station trials and in demonstration plots as DPX 3519. Released as DP 3519 STS

**EXHIBIT B****DELTA AND PINE LAND COMPANY'S APPLICATION FOR DP 3519 STS****NOVELTY STATEMENT**

To our knowledge DP 3519 STS most nearly resembles DP 415, Hutcheson, A5545 and A5403. Differences include, but are not necessarily restricted to the following:

- 1) DP 3519 STS differs from DP 415, Hutcheson and A5403 in that DP 3519 is tolerant to sulfonylurea herbicides; whereas DP 415, Hutcheson and A5403 are susceptible
- 2) DP 3519 STS differs from A5545 in that:
  - a) DP 3519 STS is resistant to races 3 and 14 soybean cyst nematode, whereas A5545 has only race 3 resistance.
  - b) DP 3519 STS is resistant to soybean mosaic virus and A5545 is susceptible.

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

PLANT VARIETY PROTECTION OFFICE  
BELTSVILLE, MARYLAND 20705




EXHIBIT C  
(Soybean)

OBJECTIVE DESCRIPTION OF VARIETY  
SOYBEAN (*Glycine max* L.)

NAME OF APPLICANT(S) DELTA AND PINE LAND COMPANY	TEMPORARY DESIGNATION DPX 3519	VARIETY NAME DP 3519 STS
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) 100 Main Street Scott, MS 38772		FOR OFFICIAL USE ONLY PVPO NUMBER 9500154

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,  ). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE:

✓    

1 - Spherical (L/W, L/T, and T/W ratios = < 1.2)  
3 - Elongate (L/T ratio > 1.2; T/W = < 1.2)  
2 - Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)  
4 - Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

★ 2. SEED COAT COLOR: (Mature Seed)

1 - Yellow    2 - Green    3 - Brown    4 - Black    5 - Other (Specify) \_\_\_\_\_

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 - Dull ('Consoy 79'; 'Braxton')    2 - Shiny ('Nebsoy'; 'Gasoy 171')

★ 4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

★ 5. HILUM COLOR: (Mature Seed)

1 - Buff    2 - Yellow    3 - Brown    4 - Gray    5 - Imperfect Black    6 - Black    7 - Other (Specify) \_\_\_\_\_

★ 6. COTYLEDON COLOR: (Mature Seed)

1 - Yellow    2 - Green

★ 7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 - Low    2 - High

★ 8. SEED PROTEIN ELECTROPHORETIC BAND:

1 - Type A (SP1<sup>a</sup>)    2 - Type B (SP1<sup>b</sup>)

★ 9. HYPOCOTYL COLOR:

1 - Green only ('Evans'; 'Davis')    2 - Green with bronze band below cotyledons ('Woodworth'; 'Tracy')  
3 - Light Purple below cotyledons ('Beeson'; 'Pickett 71')  
4 - Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

★ 10. LEAFLET SHAPE:

1 - Lancolate    2 - Oval    3 - Ovate    4 - Other (Specify) \_\_\_\_\_

11. LEAFLET SIZE:

- ☒ 2 1 - Small ('Amsoy 71'; 'A5312') 2 - Medium ('Corsoy 79'; 'Gasoy 17')  
3 - Large ('Crawford'; 'Tracy')

12. LEAF COLOR:

- ☒ 3 1 - Light Green ('Weber'; 'York') 2 - Medium Green ('Corsoy 79'; 'Braxton')  
3 - Dark Green ('Gnome'; 'Tracy')

★ 13. FLOWER COLOR:

- ☒ 2 1 - White 2 - Purple 3 - White with purple throat

★ 14. POD COLOR:

- ☒ 1 1 - Tan 2 - Brown 3 - Black

★ 15. PLANT PUBESCENCE COLOR:

- ☒ 1 1 - Gray 2 - Brown (Tawny)

16. PLANT TYPES:

- ☒ 2 1 - Slender ('Essex'; 'Amsoy 71') 2 - Intermediate ('Amcor'; 'Braxton')  
3 - Bushy ('Gnome'; 'Govan')

★ 17. PLANT HABIT:

- ☒ 1 1 - Determinate ('Gnome'; 'Braxton') 2 - Semi-Determinate ('Will')  
3 - Indeterminate ('Nebsoy'; 'Improved Pelican')

★ 18. MATURITY GROUP:

- ☒ 0 ☒ 8 1 - 000 2 - 00 3 - 0 4 - I 5 - II 6 - III 7 - IV 8 - V  
9 - VI 10 - VII 11 - VIII 12 - IX 13 - X

★ 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

BACTERIAL DISEASES:

- ★ ☒ 2 Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)  
★ ☐ Bacterial Blight (*Pseudomonas glycinea*)  
★ ☐ Wildfire (*Pseudomonas tabaci*)

FUNGAL DISEASES:

- ★ ☒ 0 Brown Spot (*Septoria glycines*)  
Frogeye Leaf Spot (*Cercospora sojina*)  
★ ☒ 0 Race 1 ☐ Race 2 ☐ Race 3 ☐ Race 4 ☐ Race 5 ☐ Other (Specify)  
☒ 0 Target Spot (*Corynespora cassicola*)  
☒ 0 Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)  
☒ 0 Powdery Mildew (*Microsphaera diffusa*)  
★ ☒ 0 Brown Stem Rot (*Cephalosporium gregatum*)  
☒ 2 Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

## 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

## FUNGAL DISEASES: (Continued)

- ★ ☐ 0 Pod and Stem Blight (*Diaporthe phaseolorum* var. *sojae*)
- ☐ 0 Purple Seed Stain (*Cercospora kikuchii*)
- ☐ 0 Rhizoctonia Root Rot (*Rhizoctonia solani*)
- Phytophthora Rot (*Phytophthora megasperma* var. *sojae*)
- ★ ☐ 1 Race 1 ☐ 0 Race 2 ☐ 0 Race 3 ☐ 0 Race 4 ☐ 0 Race 5 ☐ 0 Race 6 ☐ 0 Race 7
- ☐ 0 Race 8 ☐ 0 Race 9 ☐ 0 Other (Specify) \_\_\_\_\_

## VIRAL DISEASES:

- ☐ 0 Bud Blight (Tobacco Ringspot Virus)
- ☐ 0 Yellow Mosaic (Bean Yellow Mosaic Virus)
- ★ ☐ 0 Cowpea Mosaic (Cowpea Chlorotic Virus)
- ☐ 2 Pod Mottle (Bean Pod Mottle Virus)
- ★ ☐ 2 Seed Mottle (Soybean Mosaic Virus)

## NEMATODE DISEASES:

- Soybean Cyst Nematode (*Heterodera glycines*)
- ★ ☐ 0 Race 1 ☐ 0 Race 2 ☐ 2 Race 3 ☐ Race 4 ☐ 2 Other (Specify) Race 14
- ☐ 0 Lance Nematode (*Hoplolaimus Colombus*)
- ★ ☐ 1 Southern Root Knot Nematode (*Meloidogyne incognita*)
- ★ ☐ 0 Northern Root Knot Nematode (*Meloidogyne Hapla*)
- ☐ 1 Peanut Root Knot Nematode (*Meloidogyne arenaria*)
- ☐ 0 Reniform Nematode (*Rotylenchulus reniformis*)
- ☐ OTHER DISEASE NOT ON FORM (Specify): \_\_\_\_\_

## 20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ★ ☐ 0 Iron Chlorosis on Calcareous Soil
- ☐ 2 Other (Specify) Tolerant to sulfonylurea herbicides

## 21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ☐ 0 Mexican Bean Beetle (*Epilachna varivestis*)
- ☐ 2 Potato Leaf Hopper (*Empoasca fabae*)
- ☐ 0 Other (Specify) \_\_\_\_\_

## 22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	DP 415	Seed Coat Luster	DP 415
Leaf Shape	A5403	Seed Size	DP 415
Leaf Color	DP 415	Seed Shape	DP 415
Leaf Size	A5403	Seedling Pigmentation	DP 415

21. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/POD
				CM Width	CM Length	% Protein	% Oil		
DP 3519 STS <small>Submitted</small>	122	1.5	74			37.5	18.0	15	
DP 415 <small>Name of Similar Variety</small>	126	2.1	79			38.4	18.0	16	

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.

2. Bortner, B.R. and R.J. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.

3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A<sub>2</sub> in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.

4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol., 1: 1-19.

'95 MAY -2 A11:17

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USDA-AMS-PVPO

**EXHIBIT D****DELTA AND PINE LAND COMPANY'S APPLICATION FOR DP 3519 STS****ADDITIONAL DESCRIPTION OF VARIETY**

DP 3519 STS is an  $F_3$  selection composited in the  $F_4$  generation from the cross of DP 415\\A5403\\W20\\Hutcheson. It is tolerant to sulfonylurea herbicides maturing 3 to 4 days earlier than DP 415 with excellent yield potential and good disease resistance. DP 3519 STS plants are similar to DP 415 in height.

DP 3519 STS is a very early group V averaging 2% higher yield and 4 days earlier in maturity than DP 415. It has purple flowers, gray pubescence and tan pods at maturity. Seed are dull yellow with imperfect black hila averaging 3250 seed per pound.

DP 3519 STS has resistance to races 3 and 14 of soybean cyst nematode and is resistant to stem canker. It has shown good tolerance to phytophthora root rot. DP 3519 STS is susceptible to frogeye leaf spot and root knot nematodes.

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**SOYBEAN PRODUCT NOMINATION FORM**

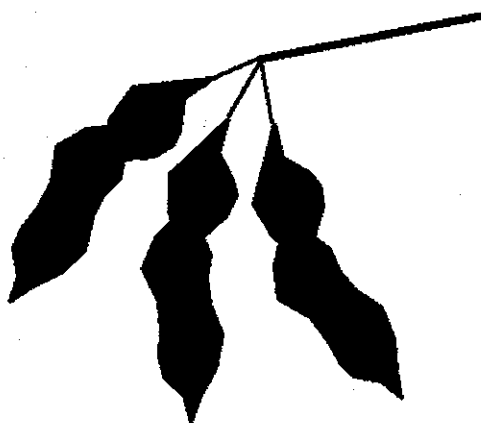
Suggested Nominee Number: DPX 3519

Experimental Designations: 90373-198 (5019)

Submitted by: Grover Shannon, Harry Collins and Tom Wofford

Date Submitted: January 1, 1995

Parentage: DP415\\A5403\\W20\\HUTCHESON



Data Collected from 15 Replicated Yield Tests.

**I. Plant & Seed Characteristics:**

Flower Color:	Purple
Pubescence Color:	Grey
Hilum Color:	Imperfect Black
Pod Wall Color:	Tan
Seed Coat Luster:	Dull
Leaf Shape:	Ovate
Plant Type:	Determinate
Peroxidase Activity:	



## Variety Description

## DP 3519

DPX 3519 is an F3 selection composited in the F<sub>4</sub> generation from the cross of DP 415\\A5403\\W20\\Hutcheson. It is tolerant to sulfonylurea herbicides maturing 3 to 4 days earlier than DP 415 with excellent yield potential and good disease resistance. DPX 3519 plants are similar to DP 415 in height.

DPX 3519 is a very early group V averaging 2% higher yield than DP 415. It has purple flowers, grey pubescence and tan pods at maturity. Seed are dull yellow with imperfect black hila averaging 3250 seed per pound.

DPX 3519 has resistance to race 3 and 14 of soybean cyst nematode and stem canker. It has shown good tolerance to phytophthora root rot. DPX 3519 is susceptible to frogeye leaf spot and root knot nematodes.

## KEY FEATURES

- Sulfonylurea herbicide tolerant
- Early Group V maturity with excellent yield potential
- Stem Canker resistance
- Resistant to Race 3 and 14 cyst nematode
- Allow greater flexibility to manage problem weeds

## CHARACTERISTICS

Maturity	Early group V
Flower Color	Purple
Pubescence Color	Grey
Hilum Color	Imperfect Black
Plant Height	Medium
Lodging Resistance	Excellent
Shatter Resistance	Excellent
Seed Size	Medium
Stem Canker	Resistant
Phytophthora Root Rot	Field Tolerant
Cyst Nematode	Resistant to Race 3 and 14
Common Root Knot Nematode	Moderately Susceptible
Lance Nematode	Unknown
Red Crown Rot	Unknown
Aerial Blight	Unknown
Frogeye Leaf Spot	Unknown
Sudden Death Syndrome	Unknown
High Chloride	Sensitive
Soybean Mosaic Virus	Resistant

## II. Agronomic Characteristics

Line	Mat.	Plant Height	Ldg.	Shat.	Seeds/ Lb.	% Pro.	% Oil
DPX 3519	-4	29	1.5	Exc.	3250	37.5	18.0
DP 415	0	31	2.1	Exc.	3050	38.4	18.0
A5403	-5	28	1.4	Exc.	3250	36.2	18.4
RA 452	-8	37	2.2	Exc.	3600	35.9	20.0

## III. Yield Data:

## 1993-94 Yield &amp; Agronomic Data Summary

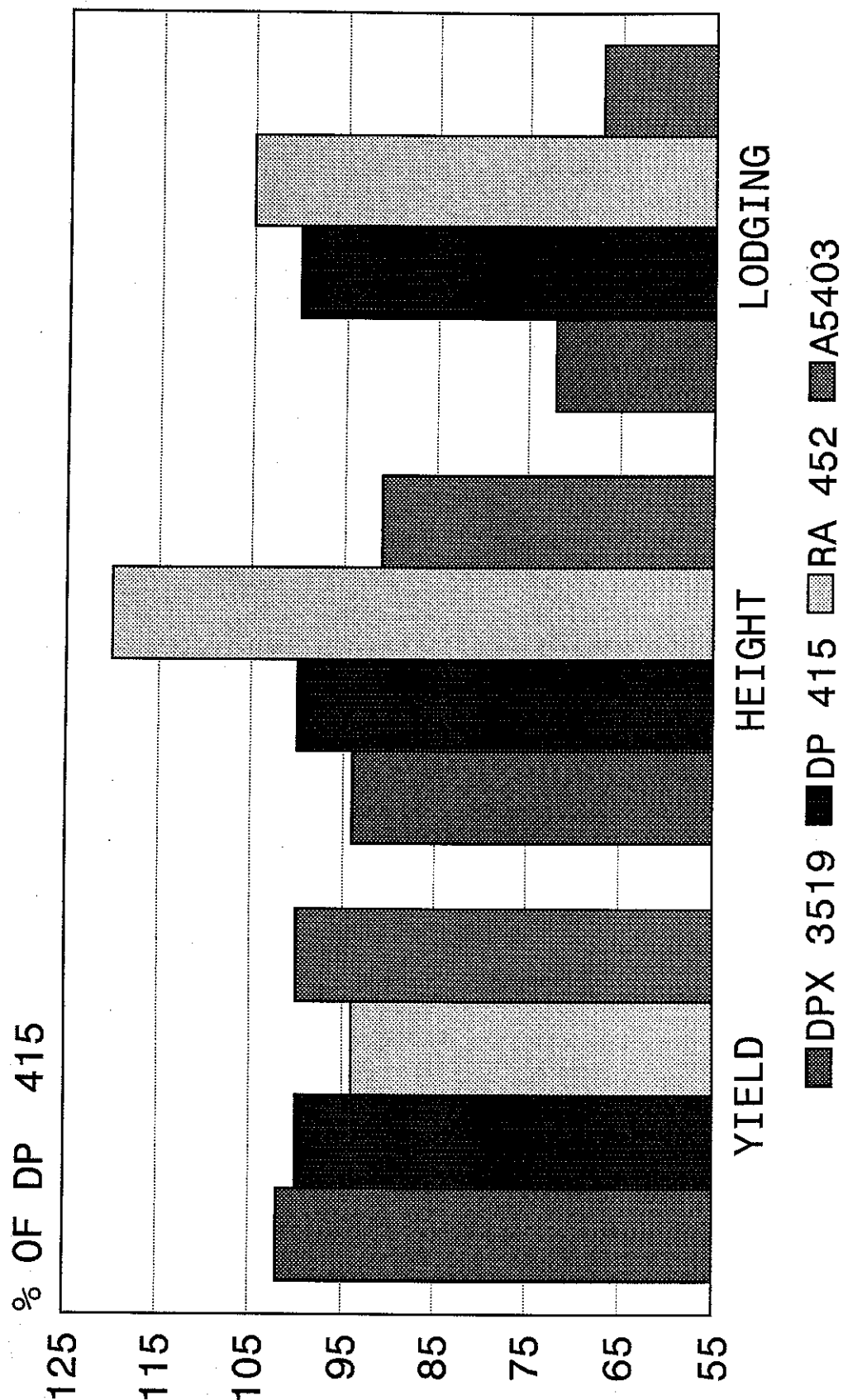
Line	Yield	% Yield	Mat.	Hgt.	Ldg.
DPX 3519	52.3	103	-4	29	1.5
DP 415	50.8	100	0	31	2.1
P9501	50.6	100	-6	37	2.2
RA 452	47.3	93	-7	37	2.2
# Tests	17	17	7	10	7

## 1994 Yield &amp; Agronomic Data Summary - 455M

Line	Yield	% Yield	Mat.	Hgt.	Ldg.
DPX 3519	51.6	102	-4	29	1.5
A 5403	50.7	100	-5	28	1.4
DP 415	50.6	100	0	31	2.1
RA 452	47.5	94	-8	37	2.2
# Tests	15	15	5	10	7

# DPX 3519

## 1994 YIELD & AGRONOMIC SUMMARY



9500154

## 1993 Yield &amp; Agronomic Data Summary - 351P311 AND 351P316

Line	Yield	% Yield	Mat.	Hgt.	Ldg.
DPX 3519	57.7	111	-3		
P9501	52.4	101	-1		
DP 415	52.0	100	0		
RA 452	46.1	89	-2		
A 5560	40.8	79	-4		
# Tests	2	2	2		

## Yield Summary in Bu/A

By Region: 1994

LINE	MIDSOUTH		SOUTHEAST		OVERALL MEAN	
	YLD	% YLD	YLD	% YLD	YLD	% YLD
DPX 3519	55.0	108	45.0	89	102	51.6
A5403	50.9	100	50.3	100	100	50.7
DP 415	50.6	100	50.4	100	100	50.6
RA 452	47.6	94	47.3	94	94	47.5
# TESTS	11	11	4	4	15	15

By States: 1993

LINE	TN	AR	MS	LA	NC	SC	VA	MEAN
DPX 3519	57.1	55.9	47.5	58.4	40.9	32.6	51.2	51.6
A 5403	58.9	55.7	30.3	54.0	54.3	33.5	52.3	50.6
DP 415	58.4	52.2	38.7	55.9	54.3	34.2	51.3	50.5
RA 452	54.6	48.8	37.7	47.8	53.3	29.3	46.5	47.5
# TESTS	2	4	2	2	2	1	1	15

## By Soil Type Planting and Disease Situation:

Line	Loam	Clay	SCN	Early Planted	Stem Canker	Root Knot	SU HERB	Aerial Blight
DPX 3519	52.8	54.5	47.1		57.2		50.7	
A5403	54.1	49.9	55.4		49.7		36.7	
DP 415	54.6	52.3	46.7		42.9		40.1	
RA 452	52.7	45.1	52.2		41.9		39.1	
# TESTS	5	3	3		1		3	1020

## 1993-94 Head to Head Comparisons

DPX 3519 vs	Total Comp.	Won by- Bu/A	# Wins	% Wins
DP 415	15	1.1	7	47
A5403	15	1.0	8	53
RA 452	15	4.1	12	80

YIELD IN BU/A  
BY TESTS AND LOCATIONS

1994 - 455M

Line	M I D S O U T H										Mid-Sth Mean
	TN RP	TN UC	AR CD	AR BR	AR DM	AR WB	MS SL	MS SC	LA TL	LA MG	
DPX 3519	50.9	63.6	63.1	53.7	52.4	54.3	54.0	40.9	59.5	57.2	55.0
A5403	56.2	61.5	61.8	56.2	52.9	51.7	30.8	29.7	58.3	49.7	50.9
DP 415	49.3	67.5	58.2	39.9	46.8	64.0	40.5	36.9	61.7	42.9	50.6
P9501	42.5	65.7	63.4	50.1	48.9	45.9	43.6	41.3	61.9	67.7	53.1
RA 452	42.5	66.6	48.8	53.5	51.7	43.0	42.6	32.8	53.6	41.9	47.6
MANOKIN	49.8	72.1	55.9	62.8	37.1	46.6	23.1	20.7	53.7	39.1	
# REPS	3	3	3	3	3	3	3	3	3	3	
C.V.	8.6	11.4	10.3	12.6	8.6	22.5	14.7	10.0	4.9	14.4	
LSD.05	7.6	11.3	10.1	7.8	6.8	12.1	10.5	6.3	4.7	12.1	

Line	S O U T H E A S T					Sth-East Mean	Over All Mean
	VA HL	NC CL	NC SF	SC OR	AL DC		
DP 3519	51.2	35.3	46.4	32.6	52.1	45.0	51.6
A5403	52.3	57.1	51.4	33.5	49.1	50.3	50.6
DP 415	51.3	53.5	55.0	34.2	50.0	50.4	50.5
P9501	39.7	53.8	49.2	28.6	45.4	43.3	50.3
RA 452	46.5	51.3	55.2	29.3	47.2	47.3	47.5
MANOKIN	49.2	47.3	50.5	26.6	39.7	42.7	45.3
# REPS	3	3	3	3	3		
C.V.	6.9	10.1	13.3	11.2	10.9		
LSD.05	5.3	7.8	13.5	5.6	8.2		

## IV. DISEASE REACTION AND OTHER INFORMATION:

Cyst Nematode

DPX 3519 is resistant to race 3 and moderately resistant to race 14 of soybean cyst nematode

	Race 3						Race 3				
	1994						1994				
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
DPX 3519	5	1	0	0	0		0	1	3	0	0
Res. Chk.	7	0	0	0	0		9	1	0	0	0
Susc. Chk.	0	0	0	0	7		0	2	2	4	0

Location: Jackson, TN                      Scott, MS  
 Conducted by: Dr. Lawrence Young          Grover Shannon  
                   USDA, Nematologist          Grady Robinson

	Race 14						Race 14				
	1994						1994				
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
DPX 3519	0	1	1	0	0		0	0	2	0	0
Res. Chk.	4	3	0	0	0		0	0	0	5	0
Susc. Chk.	0	0	0	0	5		0	0	0	6	4

Location: Jackson, TN                      Scott, MS  
 Conducted by: Dr. Lawrence Young          Grover Shannon  
                   USDA, Nematologist          Grady Robinson

Root Knot Nematode 1 = No galling 5 = Very severe galling  
 DPX 3519 is susceptible to root knot nematode.

	Common Root Knot <u>M. Incognita</u> 1994		Peanut Root Knot <u>M. arenaria</u> 1994	
DPX 3519 STS	2.0		3.0	
Res. Check	4.0		3.5	
Sus. Check	1.0		2.0	

Location: Jay, FL                              Jay, FL  
 Conducted by: Dr. Robert Kinloch          Dr. Robert Kinloch  
                   Nematologist                      Nematologist  
                   University of Florida              University of Florida

Stem Canker 1 = No symptoms 5 = Very severe symptoms  
 DPX 3519 is very resistant to stem canker.

	<u>1994</u>	<u>1994</u>
DPX 3519 STS	1.0	1.0
DP 415	1.0	1.0
A5403	1.0	1.0
RA452	1.0	1.0
S59-60	3.0	4.0

Location: Dumas, AR Morganza, LA  
 Conducted by: Grover Shannon and Grady Robinson

Frogeye Leaf Spot 1 = None 5 = Very Severe  
 DPX 3519 reaction to Frogeye Leaf Spot is unknown, but likely is susceptible.

Soybean Mosaic Virus 1 = None 5 = Very Severe  
 DPX 3519 is resistant to soybean mosaic virus.

	<u>1994</u>
DPX 3519	1.3
DP 415	1.0
A5403	3.0
RA452	4.7
P9592	3.0
S59-60	4.3

Location: Scott-Clay  
 Conducted by: Grover Shannon

Aerial Blight 1 = None 5 = Very Severe  
 DPX 3519 reaction to aerial blight is unknown.

Herbicide Tolerance  
 DPX 3519 has no known sensitivity to common soybean herbicides when used as directed. It is found to have normal tolerance to Metribuzin. It is tolerant to sulfonyleurea herbicides.

Chloride Tolerance  
 DPX 3519 is sensitive to high chloride.

Seed Stock  
 There are 612 bushels of foundation DPX 3519 and 2 units of breeder seed.

**EXHIBIT E****DELTA AND PINE LAND COMPANY'S APPLICATION FOR DP 3519 STS****STATEMENT OF APPLICANT'S OWNERSHIP**

DP 3519 STS was developed by Delta and Pine Land Plant Breeders. Selection and testing of DP 3519 STS was performed solely by Delta and Pine Land Company. By agreement between employee and Delta and Pine Land Company, all rights to any invention, discovery, or development made by an employee are assigned to the company. No rights to such an invention are retained by the employee.

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